SOLAR PIONEER MISSION OPTIONS

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The origin of the solar wind has long been a focus of science. Direct measurements, close to the source, are required. This can be accomplished by a Solar Pioneer mission that approaches within a few radii of the sun's surface. Such a mission could also characterize the acceleration processes and coronal structure by a detailed study of energetic particles. Past studies of a mission labeled Solar Probe, envisaged a 1000 kg-class spacecraft with a wide range of instruments. Current interest ranges from this kind of a mission, perhaps carried out by a consortium of space agencies, to much smaller concepts that are more consistent with the near-term anticipated budget of a single space agency. NASA's Space Physic's Division and the Jet Propulsion 1 aboratory, California Institute of Technology, have been studying two spacecraft options. A smaller, 200 kg spacecraft, would derive heavily from the planned Pluto Flyby design and could be launched on a Atlas IIAS/Star-48. Multiple copies could go on a larger launch vehicle, such as a Proton, with a Star-48 upper stage. A larger, 400 kg spacecraft would also be compatible with a Proton and could carry a more comprehensive payload. Both missions are designed to use a single gravity assist from Jupiter to keep the flight time at about three years. These options, and others, are shown to be timely, cost-effective and scientifically rewarding for renewed study of the sun and its processes.

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2. ST1
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4. None
5. Oral
6. None